

## CLAIMS

1. A phased array antenna, deployable from a retracted condition to a deployed condition, comprising a base member having, at least in part, a polygonal cross-sectional form defined by a plurality of edge regions, and  
5 a plurality of antenna panels, each antenna panel being connected, by a respective hinge means, to a respective one of said edge regions of said base member, such that, in said retracted condition, two or more of the antenna panels are stacked one on top of the other on the base member, and the hinge means being such that the antenna panels can be hinged  
10 sequentially one after the other from the stack to a position in which each panel is adjacent a respective base edge region to provide said deployed condition wherein the phased array antenna provides an extended area.
2. An antenna according to claim 1, wherein each antenna panel is generally the same cross-sectional shape as said base member.
- 15 3. An antenna according to claim 2, wherein each antenna panel is hexagonal in shape.
4. An antenna according to claim 2, wherein outer edges of each antenna panel, when deployed, are castellated in form.
5. An antenna according to any preceding claim, wherein at least one  
20 antenna panel is mounted on the opposite side of the base member to said stack in the retracted condition.
6. An antenna according to any preceding claim wherein the antenna panels are arranged such that when they are moved from the stack to the fully deployed position an edge of the panel is located adjacent to  
25 and coterminous with a respective edge of the base member.
7. An antenna according to any preceding claim, wherein side edges of each deployed panel extending from the base member are adjacent respective side edges of adjacent panels.
8. An antenna according to any preceding claim wherein each antenna  
30 panel is coupled to the base member by means of a back flap hinge, having a pivot comprising an extended sleeve and rotatable pin therein,

and a frame extending from said pin and secured to the rear side of the antenna panel.

- 5 9. An antenna according to any preceding claim wherein each antenna panel is coupled to the base member by means of a hinge wherein the mounting point of the hinge is such in relation to the position of the panel within the stack in the retracted condition that when the hinge is rotated about the pivot point the respective panel from the deployed condition is coplanar with the other antenna panels.
- 10 10. An antenna according to claim 9, wherein the mounting point of the hinge is incremented for sequential panels in the stack, by half the thickness of the antenna panel in the stack.
- 15 11. An antenna according to any preceding claim, including electrical connector means disposed along adjacent edges, in the deployed condition, of each panel and said base member, in order to make electrical connection between the base member and elements of the antenna within each panel.
- 20 12. An antenna according to any preceding claim wherein radiating elements of the phased array are arranged in regularly configured sub-arrays, preferably hexagonal.
- 25 13. An antenna according to Claim 12 wherein the outer edges of each panel in the deployed condition are castellated, and the sub-arrays extend into the castellations, with sub-arrays adjacent the base member extending over the edges of the base member.
- 30 14. An antenna according to any preceding claim, wherein the upper surface of the base member provides a central antenna panel.
15. A phased array antenna according to any preceding claim, incorporated in a telecommunications satellite, the satellite having a service module including solar cell panels, and the antenna being coupled via a rotatable joint to a boom member that is mounted to the service module, to permit relative rotation of the antenna and service module in the deployed condition.

- 15 -

16. A phased array antenna according to claim 15, wherein at least one antenna panel is mounted on the opposite side of the base member to said stack in the retracted condition, to permit deployment in front of said boom member.
- 5 17. A telecommunications satellite comprising a service module and a phased array antenna coupled to the service module by means of a boom member, the service module including solar panels, and the phased array antenna being deployable from a retracted condition to a deployed condition, wherein in the retracted condition, the antenna is  
10 positioned on top of the service module, and the boom member including rotatable means so that the antenna, when deployed, can be rotated relative to the service module, and the antenna comprising a plurality of antenna panels, such that, in said retracted condition, two or more of the antenna panels are stacked one on top of the other, wherein for  
15 deployment, the antenna is firstly moved by means of the boom member to a position away from the service module, and then the antenna panels are moved to a deployed condition wherein the phased array antenna provides an extended area.
18. A satellite according to claim 17, wherein said antenna includes a base  
20 member to which said boom member is mounted, said stack being mounted on one side of said base member, and in which at least one antenna panel is mounted on the opposite side of the base member to said stack in the retracted condition, to permit deployment in front of said boom member.
- 25 19. A phased array antenna substantially as hereinbefore described with reference to any of Figures 1 to 6.
20. A satellite substantially as hereinbefore described with reference to any of Figures 1 to 6.